

Date: Thursday, 3/9/2006 11:48:42 AM  
 User: Linda Lacelle

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : BLADE FITTING  
 Job Number : 26190  
 Estimate Number : 12300  
 P.O. Number : NIA Part Number : D3488042  
 This Issue : 3/9/2006 S.O. No. : NIA Drawing Number : D3488 REV# B JLM  
 Prsht Rev. : NC Project Number : N/A  
 First Issue : NIA Type : MACHINED PARTS Drawing Revision : A  
 Previous Run : NIA Material : NIA  
 Written By : SEE COMMENT BELOW Due Date : 3/16/2006 Qty: 1 Um: Each  
 Checked & Approved By : SEE ABOVE USER & DATE  
 Comment : Est Rev:A New Issue 06-02-28 JLM

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 D6103003 alum billet



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)  
 Aluminum Round Billet D6103-003  
 Batch: B 25806 JLM 06-03-09 ①

2.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE  
 1-Turn as per Dwg DSK 101 & Folio FA627  
 2-Deburr JLM 06-03-09 ①

3.0 QC2 INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE JLM 06-03-09 ①

4.0 HAAS1 HAAS CNC VERTICAL MACHINING #1



Comment: HAAS CNC VERTICAL MACHINING #1

Machine as per Folio FA627 & Dwg D3488-2

2-Deburr: DUFF - OFF SHARP EDGE. J.L. 06-03-09

5.0 QC2 INSPECT PARTS AS THEY COME OFF MACHINE


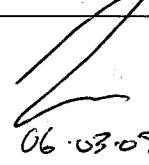

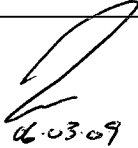


Comment: INSPECT PARTS AS THEY COME OFF MACHINE J.L. 06-03-09

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: ☒ Date: 06/03/09

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
06-03-09	4	- 1 part scrap - dimension 1.417 is 1.402 - tool to low in pgm		- pgm Fixed - scraped part	J.L. 06.03.09	 06.03.09		 06.03.09

NOTE: Date & initial all entries

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Drawing Name: BLADE FITTING

Job Number: 26190

Part Number: D3488042

Job Number:



Seq. #:	Machine Or Operation:	Description :
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6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

MS 06/03/09

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

MS 06/03/10

(1)

8.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

MDL 06-03-27  
Q.M 06-03-10

(1)

9.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

MS 06/03/10

(1)

10.0

ALS71032225

INSERT



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Pick:

Qty Part Number Description Batch

4 ALS7-1032-225 Insert

M14576

Q.M 06-03-29

(1)

11.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Install Inserts as per Dwg D3488

Q.M 06-03-30

(1)

12.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

MS 06/03/30

(1)

13.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: EP

MS 06-03-30

(1)

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 3/9/2006 11:48:42 AM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BLADE FITTING

Job Number: 26190

Part Number: D3488042

Job Number:



Seq. #:

Machine Or Operation:

Description :

14.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL  
Inspection Level 21

*Handwritten:* 26/03/06 (1)

Job Completion



*Handwritten:* U 26.03.30

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

DART.AEROSPACE LTD		Work Order: 26190
Description: Blade Folding		Part Number: D3488-2
Inspection Dwg: D3488-01 Rev: A		Page 1 of 2

# FIRST ARTICLE INSPECTION CHECKLIST

☐ First Article ☒ Prototype

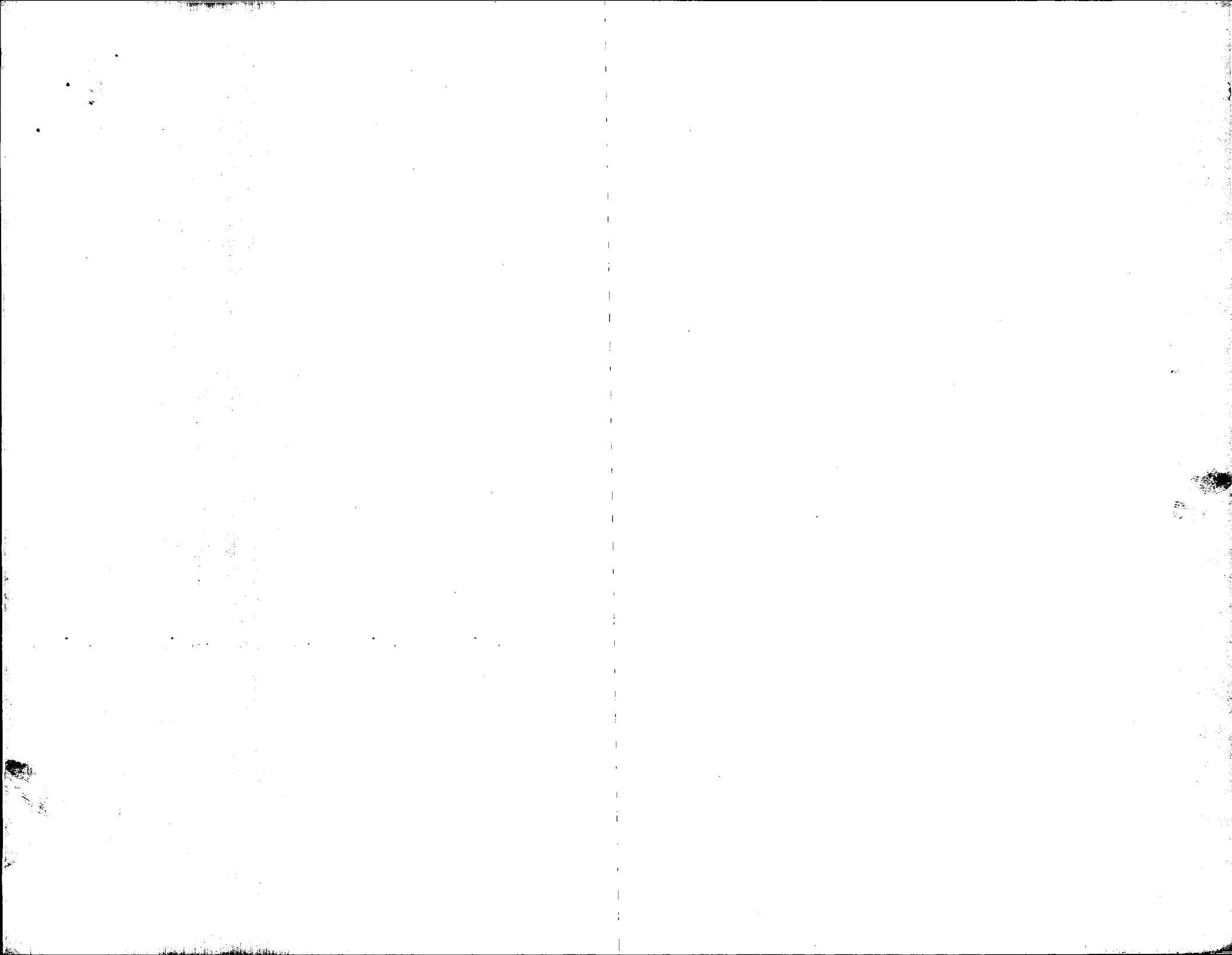
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
.125	± .010	.128	✓			
2.616	"	2.615	✓			
.793	"	.797	✓			
1.301	"	1.295	✓			
1.417	"	1.420	✓			
90°	"	90°	✓			
1.802	± .010	1.805	✓			
Ø.508	+ .006 - .001	.510	✓			
R062	± .010	.060	✓			
R.032	"	.032	✓			
.750	"	.750	✓			
1.500	± .010	1.500	✓			
1.250	"	1.245	✓			
8.000	+ .030 - .0	8.005	✓			
11.18	± .030	11.170	✓			
Ø.484	+ .005 - .001	.488	✓			
1.180	± .010	1.180	✓			
3.150	"	3.150	✓			
3.070	"	3.068	✓			
.590	"	.587	✓			
.125	"	.122	✓			See attached e-mail
1.005	"	1.005	✓			
3.500	"	3.500	✓			

Measured by: J.L.	Audited by: MB	Prototype Approval: PH
Date: 06-03-09	Date: 06/03/09	Date: 06/03/10

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/RF	







## Peter Hum

---

**From:** David Shepherd [davids@dartaero.com]  
**Sent:** Thursday, March 09, 2006 1:15 PM  
**To:** Peter Hum  
**Cc:** Jean Luc Menard; Linda Lacelle  
**Subject:** Re: d3488 blade fitting

Peter,

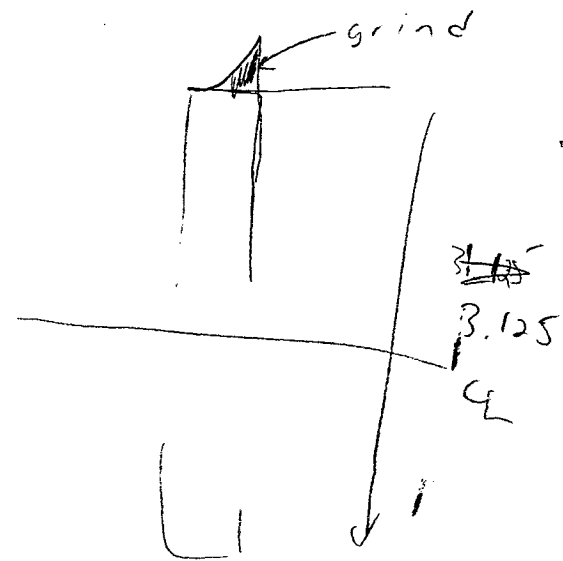
I think it is acceptable to remove this knife edge by sanding/buffing/grinding as long as we have no stress raisers left and the part looks good when this operation has been completed. As we have already discussed, we will be changing the turning to prevent this from happening in the future.

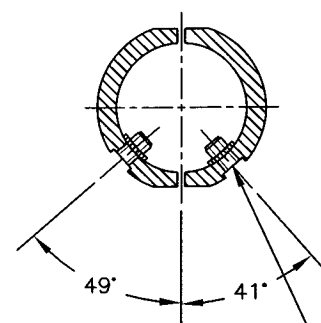
David

----- Original Message -----

From: "Peter Hum" <phum@dartaero.com>  
To: "David Shepherd (E-mail)" <davids@dartaero.com>  
Sent: Thursday, March 09, 2006 10:54 AM  
Subject: d3488 blade fitting

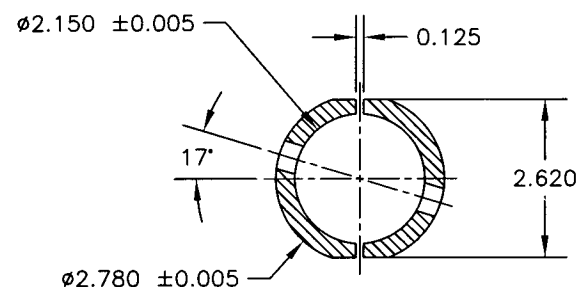
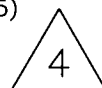
> Hi David,  
>  
> I was examining the 1st off of the blade fitting and I found that the  
> machining in accordance with the turning detail will leave a knife edge.  
>  
> (see my attached picture)  
>  
> I've talked to JLM and have faxed you a possible solution  
>  
> Peter Hum  
> Mechanical Designer  
>  
> DART Aerospace Ltd.  
> Email...phum@dartaero.com  
> Phone...613-632-3336  
> Fax.....613-632-4443  
>  
>





SECTION B-B

Ø0.297  
C'BORE Ø0.430 x 0.100  
INSTALL ALS4-1032-225 (OR AKS4-1032-225  
OR ALS7-1032-225 OR AKS7-1032-225)  
INSERTS AFTER FINISH  
(4 PLACES)



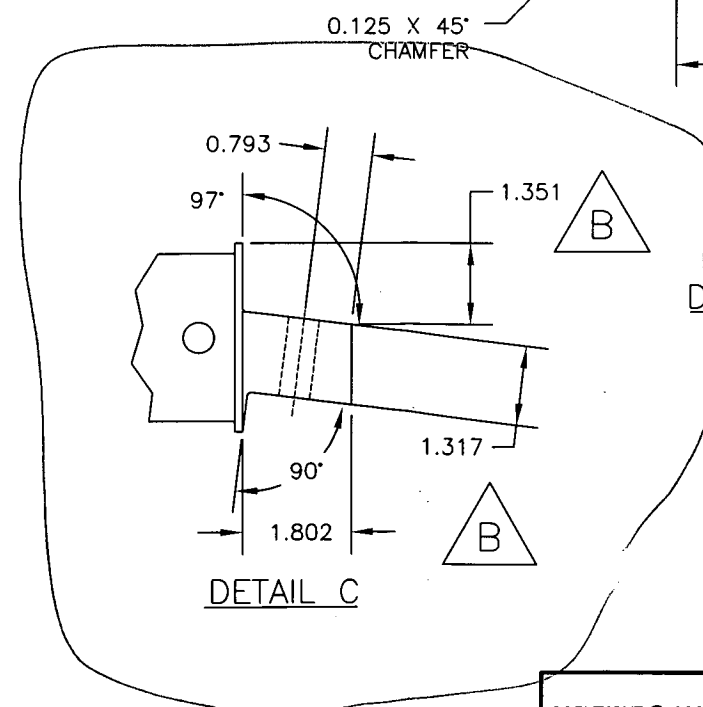
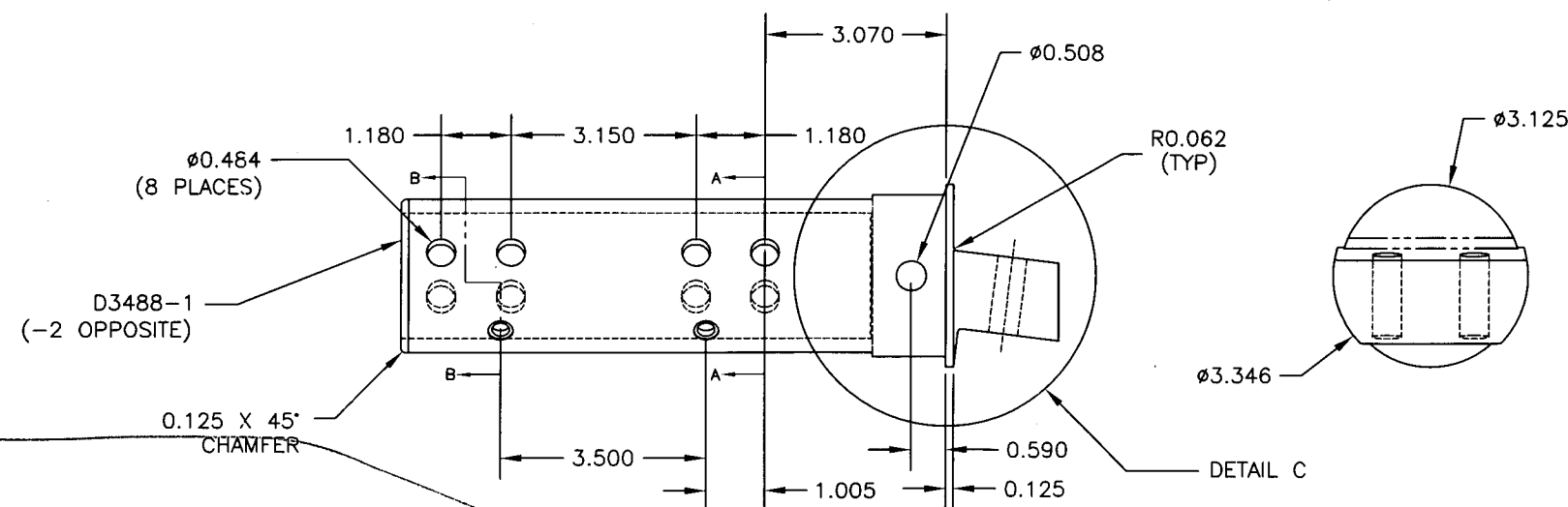
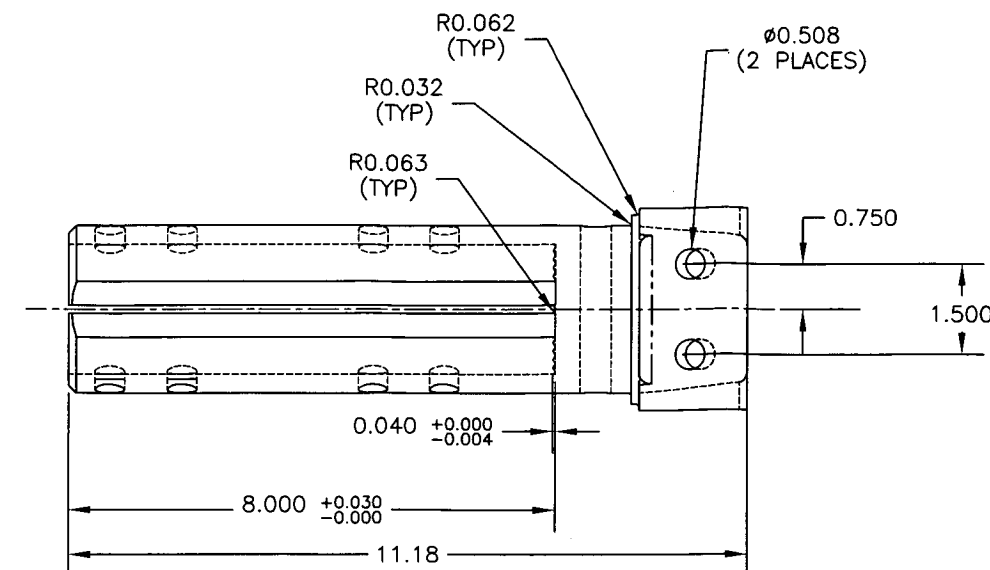
SECTION A-A

**D3488-041/-042 BLADE FITTING ASSEMBLY PARTS LIST**

QTY -041	QTY -042	PART NUMBER	DESCRIPTION
X		D3488-041	BLADE FITTING ASSEMBLY (LH)
	X	D3488-042	BLADE FITTING ASSEMBLY (RH)
1		D3488-1	BLADE FITTING (LH)
	1	D3488-2	BLADE FITTING (RH)
4	4	ALS4-1032-225 or AKS4-1032-225 or ALS7-1032-225 or AKS7-1032-225	INSERT

**D3488-041/-042 BLADE FITTING**

- 1) MATERIAL: MAKE D3488-1/-2 FROM ALUMINUM 7075-T7351 ROUND BAR PER QQ-A-225/9 (REF. DART MATERIAL SPEC M7075T73R)
- 2) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
- 3) BREAK UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) INSTALL INSERTS AFTER POWDER COAT
- 5) ALL DIMENSIONS ARE IN INCHES
- 6) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED



DETAIL C

D3488-041 SHOWN (D3488-042 OPPOSITE)

**PRELIMINARY ISSUE**

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B	06.03.15	CHANGE THICKNESS
A	05.12.20	NEW ISSUE
DESIGN PH	DRAWN BY PH	<b>DART</b> DART AEROSPACE USA, INC. PORT HADLOCK, WA
CHECKED #	APPROVED #	DRAWING NO. D3488 REV. B SHEET 1 OF 1
DATE 06.03.15	TITLE BLADE FITTING	SCALE 1:3

